Claim 1 recites "receiving raw image data from an imaging modality; storing predetermined preprocessing functions applicable to the raw image data; [and] applying at least one and fewer than all of the preprocessing functions to the raw image data to form partially preprocessed raw image data." (emphasis added) Independent claims 7 and 14 both recite "receiving the raw image data from an imaging modality; [and] applying at least one and fewer than all of predetermined preprocessing functions to the raw image data to form partially preprocessed raw image data." (emphasis added)

There is no motivation for one of ordinary skill in the art to combine Keeler and Fisher in the manner suggested in the Office Action. Keeler and Fisher concern different fields of art and are concerned with solving different problems than those that are addressed by the claimed invention. Keeler does not recite or suggest a Picture Archiving and Communication System (PACS). Specifically, Keeler "pertains in general to predictive system models, and more particularly, to processing of the data so as to account for time synchronization, time-delays, transforms and variable time-delays prior to input to a network for either training of the network or running of the network." (col. 1, lines 18-23) Fisher neither discloses nor suggests using predictive system models, or processing data to account for time synchronization, time-delays, transforms and variable time-delays. Therefore, there is no motivation in either Fisher or Keeler to, as stated in the Office Action, modify the "PACS system disclosed by Fisher to include a preprocessing method, as taught by Keeler, in order to improve image quality."

Moreover, even if Keeler and Fisher are combined, the resulting combination still fails to disclose or suggest "receiving raw image data from an imaging modality" and "applying at least one and fewer than all of the predetermined preprocessing functions to the raw image data to form partially preprocessed raw image data" as in claims 1, 7 and 14. The Office Action acknowledges that "Fisher does not disclose storing predetermined preprocessing functions applicable to the raw image data nor applying at least one and fewer than all of the preprocessing functions to the raw image data." Keeler does not make up for the deficiencies of Fisher. Namely, Keeler fails to disclose or suggest receiving raw image data from an imaging modality or applying predetermined preprocessing functions to raw image data from an imaging modality, among other

things. Instead, Keeler's predictive network is used to train a network to monitor a manufacturing operation, such as "the process flow through a plant." (col. 15, line 10, and FIG. 9) The network measures various parameters, such as pressure and temperature, and then takes into account the effect the measured parameter will have, after a delay, on the plant output. (col. 15, lines 9-28) Keeler states that "these delays are accounted for during training, and, subsequently, during the run time operation, these delays are also accounted for." (col. 15, lines 46-48) Keeler's preprocessing operation is discussed with reference to FIG. 1:

> Referring now to FIG. 1, there is illustrated an overall block diagram of the data preprocessing operation in both the training mode and the run time mode. In the training mode, one of more data files 10 are provided, which data files include both input training data and output training data. The training data is arranged in "sets", which sets correspond to different plant variables, and which may be sampled at different time intervals. This data is referred to as the "raw" data. (col. 4, lines 35-43, emphasis added)

Therefore, Keeler's preprocessing functions are not applicable to raw image data, and thus Keeler does not apply the preprocessing functions to raw image data to form partially preprocessed raw image data.

Regarding claim 14, the Office Action states that "Keeler teaches that it is known to include a preprocessing database 14 in a network (Abstract, lines 2-5)." However, Keeler's teachings clearly are directed to a predictive network, which is in a different field of art and concerned with solving different problems, as discussed previously. Furthermore, Keeler's predictive network defines and stores preprocessing parameters during the training mode, then applies the preprocessing parameters to run time data during the run time mode to provide a predicted output (or control output) to a distributed control system. Specifically, Keeler states that:

> during the training mode, the preprocess parameters are defined and stored in a storage device (14) in a particular sequence and delay settings are determined in the storage device (18). During the runtime mode, runtime data is derived from a distributed control system (24) and then preprocessed in accordance with predetermined process parameters and delayed in accordance with the predetermined delay settings. The preprocessed data is then input to the system model (26') to provide a predicted output, which is a control output to the distributed control system (24). (Abstract, lines 14-23)

Therefore, claims 1, 7 and 14 are patentable over Fisher and Keeler.

Claims 2-6, 8-13, and 15-20 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Fisher et al. (4,833,625) in view of Keeler et al. (5,479,573), and in further view of Takeo et al. (6,231,246). Claims 2, 9, and 16 recite "predetermining preprocessing functions including at least one frequency preprocessing function and at least one contrast preprocessing function." Claims 3, 10 and 17 recite applying "at least one frequency preprocessing function to the raw image data." Claims 5, 12 and 19 recite applying "at least one contrast preprocessing function to the raw image data."

In reference to Takeo, the Office Action states that "it is known to use predetermined preprocessing functions including at least one sharpness or "frequency" preprocessing function and at least one gradation or "contrast" preprocessing function (col. 2, lines 64-66)." However, Takeo concerns processing an image with two different processing conditions so that the image is correctly displayed/recorded on two different medium, such as a CRT display device 3 and a laser printer (LP) 4. (col. 7, lines 32-50, and FIGS. 4A, 4B, 4C) In fact, Col. 2, lines 64-66 of Takeo does not recite or suggest a preprocessing function, but instead recites the step of:

> preparing first reproduced image processing conditions, which yield a visible image having a desired level of gradation and/or a desired level of sharpness when the visible image is reproduced by the first image reproducing means, and the corresponding second reproduced image processing conditions, which yield a visible image having a desired level of gradation and/or a desired level of sharpness when the visible image is reproduced by the second image reproducing means. (col. 2, line 64 - col. 3, line 5, emphasis added)

As illustrated in FIGS. 1, 6A and 6B, the image processing means 1 of Takeo directly sends output data to one or more CRTs 3, 3' or LPs 4, 4'. Furthermore, Takeo does not recite or suggest preprocessing functions anywhere else, and thus Takeo fails to make up for the deficiencies of Fisher and Keeler. Therefore, claims 2, 3, 5, 9, 10, 12, 16, 17 and 19 are patentable over Fisher, Keeler and Takeo. In addition, claims 4, 11 and 18 depend from 3, 10 and 17, respectively, and claims 8 and 15 depend from independent claims 7 and 14, respectively. Therefore, these claims are also patentable for reasons given above.

It is respectfully submitted that the pending claims define allowable subject matter. Should anything remain in order to place the present application in condition for allowance, the Examiner is kindly invited to contact the undersigned at the telephone number listed below.

Please charge any additional fees or credit overpayment to the Deposit Account of McAndrews, Held & Malloy, Ltd., Account No. 13-0017.

Respectfully submitted,
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APPENDIX

AMENDMENTS TO THE SPECIFICATION

Paragraph, page 6, lines 9-18:

The display workstations 112-116 preferably allow their operator to save operator preferences in the PACS system 106 for future retrieval and subsequent application. As an example, the display workstations 112-116 may identify an operator by login name or by querying the operator for an identification code. As the operator works with the preprocessing functions, the operator may develop a preference for application of specific preprocessing functions. The display workstations 112-116 save the operator preferences 118 in, for example, [in] the preprocessing database 110. When the operator logs in at a later time, the display workstations 112-116 query the database for the operator preferences 118 (e.g., based on login name, or operator ID) and retrieve any preferences found.

Paragraph, page 6, lines 19-27:

The display workstations 112-116 may then apply the retrieved operator preferences 118 by default to any raw image data currently retrieved by the display workstations 112-116. The operator preferences 118 may include additional information other than the preferred preprocessing functions, including screen resolution, image layout and position, and color information. Furthermore, the operator preferences 118 may additionally [additional] be stored based on anatomical areas of interest. For example, the operator preferences 118 may include the default preprocessing functions to be applied for neck images, and the default preprocessing functions to be applied for chest images.